

特 許 公 報

④ 公告 昭和48年(1973)4月10日

発明の数 1

(全2頁)

⑤ 時計の駆動装置

- ① 特 願 昭44-42744
② 出 願 昭44(1969)5月31日
③ 発 明 者 雑賀義太郎
愛知県西春井郡清洲町大字一場字
番町207 ナショナル電気時計株
式会社内
④ 出 願 人 ナショナル電気時計株式会社
愛知県西春井郡清洲町大字一場字
番町207
⑤ 代 理 人 弁理士 竹元敏丸

図面の簡単な説明

第1図は本発明実施例の説明図、第2図は要部
断面図である。

発明の詳細な説明

本発明は球体を利用した時計に関するもので常
に一定の力を輪列に与えて高精度の時計を得よう
とするものである。

一般に時計の精度を左右する大きな原因となる
ものに輪列に与える力の不均一がある。即ち全舞
式の時計においては全舞の巻込み時と巻込み前
においては全舞の復帰力が大きく異なり又乾電池式
時計においては乾電池の新しい時と古くなった時
とで起電力が異なるために精度が落ちる欠点があ
り時計設計時に設計者が最も苦心する点である。

本発明は上記の点に鑑みて為したものであり、
以下実施例図面に従つて本発明を説明すると、1
は時計地板2に軸3によつて回動自在に枢着し公
知なる輪列(図示せず)と連関せしめてなる中真
車、4は該中真車1に噛合するピニオン5を回着
すると共に周胴を6分割し各分割部4'...を鋼球
や磁器球等の質量をもつた球体6の曲率と略同一
に窪曲してなる星車であり、該星車4の周胴分割
部4'に最下段の球体6が当接する様に切欠部7を
形成せる垂直筒体8aとわずかに傾斜せる水平筒

体部8bを連設してなる筒体8を配設した発明の
時計の駆動装置を構成する。

9は筒体8の上端部に連設せる元球体留、10
は筒体8の下端部に連設する下球体留であり両球
体留9、10間にコンベア11を配設し該コンベ
ア11を一定時間毎にモータ12によつて回動さ
せ下球体留10より元球体留9へ球体を移送せし
めるものである。なお該モータ12は時計筐体内
に配設せる乾電池(図示せず)と電気的に接続し
ている。

而して筒体8内に複数個の球体6...を投入す
れば該球体6...の重量によつて星車4は時計の方
向(右回転)に漸次回動して行き星車4のピニ
オン5によつて中真車が回動し輪列を逐て時計指針
を回動せしめ時刻を表示する。

一方球体6は星車4の回動に従つて下方に移動
し最下段の球体6は星車の軸中心よりやや下方に
おいて下方へ一気に落ち、次段の球体が星車に当
接すると共に球体最上段に水平筒体部8bより新
しい球体6がはいつてくる事によつて星車に加わる
力はわずかの間隙を除いて最初と同一の力になり
時計機構は支障なく運動する訳である。

本発明は以上の如く上端部に元球体留9を連設
し下端部に下球体留10を連設してなる筒体の垂
直筒体8a部分に切欠部7を形成し、該切欠部7
内に時計機構と連関せる星車4の周胴分割部4a
を配設し、下球体留10と元球体留9間にコンベ
ア11を配設しモータによつて一定時間毎に球体
を元球体留9内に移送するようにしたから星車に
加わる力がほとんど差がなく従つて精度の良い時
計が得られる効果がある。

⑦ 特許請求の範囲

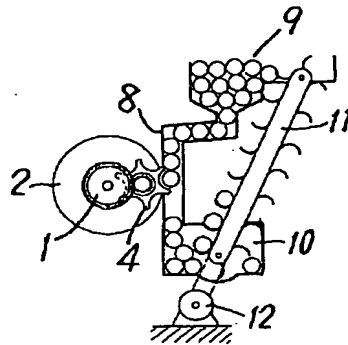
1 上端部に元球体留9を連設し下端部に下球体
留10を連設してなる筒体の垂直筒体8a部分に
切欠部7を形成し、該切欠部7内に時計機構と連
関せる星車4の周胴分割部4aを配設し、下球体
留10と元球体留9間にコンベア11を配設しモ

3

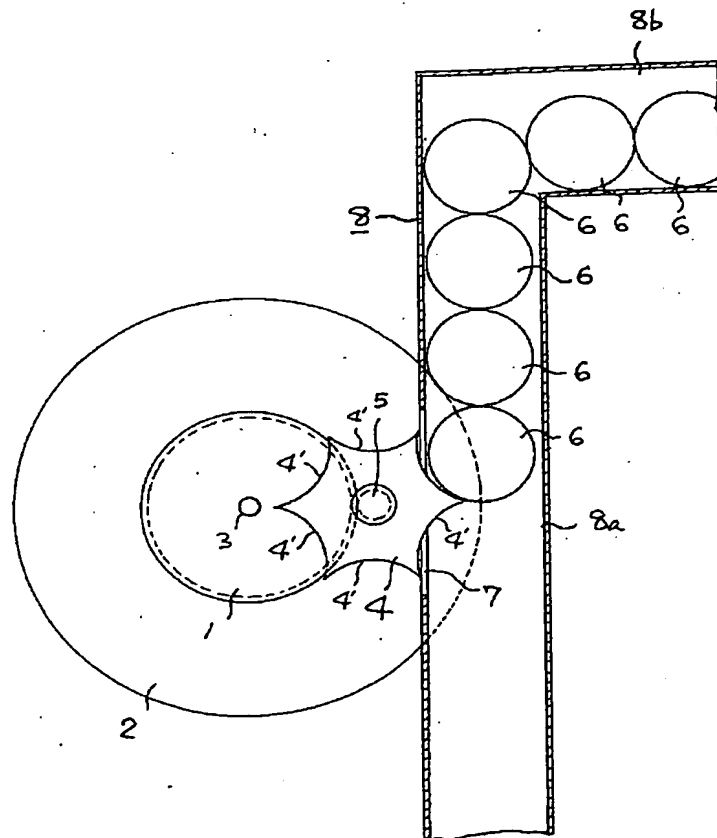
4

一タに上つて一定時間毎に球体を元球体留 9 内に
移送するようにした事の特徴とする時計の駆動装

第 1 図



第 2 図



(11) Japanese Examined Patent Application Publication No.

48-11068

(43) Publication Date: April 10, 1973

(21) Application No. 44-42744

(22) Application Date: May 31, 1969

(71) Applicant: National Electric Clock Co., Ltd.

(72) Inventor: SAIGA Yoshitaro

(74) Agent: Patent Attorney, Toshimaru TAKEMOTO

SPECIFICATION

Title of the Invention: CLOCK DRIVING DEVICE

Brief Description of the Drawings

Fig. 1 is a schematic representation of the embodiment of the present invention, and Fig. 2 is a sectional view of a major part thereof.

Detailed Description of the Invention

The present invention relates to a clock utilizing a spherical body, and in particular, it relates to a clock of high accuracy by constantly applying a predetermined force to a gear train.

Generally speaking, a large factor to affect the accuracy of a clock includes unbalance of the force to by

applied to a gear train. In other words, in a clock of power spring type, the returning force of the power spring is considerably different from each other between when and before the power spring is wound, and in a clock of dry battery type, the electromotive force is different from each other between when the dry battery is new and old, resulting in a disadvantage that the accuracy is degraded, which requires most strenuous effort for a designer.

The present invention is achieved in light of the above-described points. The present invention will be described below with reference to the drawings of the embodiment. Reference numeral 1 denotes a center wheel which is turnably pivotably attached to a clock bottom plate 2 by a shaft 3, and related to a known a gear train (not shown). Reference numeral 4 denotes a star wheel which turnably attaches a pinion 5 to be engaged with the center wheel 1 where the barrel is divided in six sections and each divided section 4' ... is recess-curved of the curvature substantially equal to that of a spherical body 6 with a mass such as a steel ball and a porcelain ball. In the clock driving device of the present invention is constituted by arranging a cylindrical body 8 in which a vertical cylindrical body 8a having a notched portion 7 so that a lowest spherical body 6 is abutted on the barrel divided section 4' of the star wheel 7 and a slightly inclined

horizontal cylindrical body 8b are continuously provided.

Reference numeral 9 denotes an original spherical body storage continuous to an upper end of the cylindrical body 8, and reference numeral 10 denotes a lower spherical body storage continuous to a lower end of the cylindrical body 8. A conveyor 11 is arranged between the spherical body storages 9, 10, the conveyor 11 is turned by a motor 12 at a predetermined interval, and the spherical body is transferred from the lower spherical body storage 10 to the original spherical body storage 9. The motor 12 is electrically connected to a dry battery (not shown) arranged in a clock casing.

When a plurality of spherical bodies 6 ... are placed in the cylindrical body 8, the star wheel 4 is gradually turned to the direction of the clock (the right turn) by the weight of the spherical bodies 6 ..., the center wheel is turned by the pinion 5 of the star wheel 4, and clock pointers are turned via the gear train to indicate the time.

On the other hand, the spherical body 6 is moved downwardly according to the turn of the star wheel 4, the lowest spherical body 6 is rapidly dropped downwardly slightly below the axis of the star wheel. When the spherical body in the next stage is abutted on the star wheel, and a new spherical body enters the highest spherical body from the horizontal cylindrical body 8b, the force

applied to the star wheel becomes identical to the first force except a slight interval, and a clock mechanism is put into motion without any trouble.

As described above, in the present invention, the notched portion 7 is formed in a part of the vertical cylindrical body 8a part of the cylindrical body in which the original spherical body storage 9 is continuously provided on the upper end and the lower spherical body storage 10 is continuously provided on the lower end, a barrel divided section 4a of the star wheel 4 related to the clock mechanism is arranged in the notched portion 7, the conveyor 11 is arranged between the lower spherical body storage 10 and the original spherical storage 9, and the spherical body is transferred into the original spherical body storage 9 at the predetermined interval by the motor. Thus, the force applied to the spherical body is less different from each other, and a clock of high accuracy can be obtained thereby.

Claims

1. A clock driving device, wherein a notched portion 7 is formed in a part of a vertical cylindrical body 8a of a cylindrical body with an original spherical storage 9 being continuously provided on an upper end and a lower spherical body storage 10 being continuously provided on a lower end

thereof, a barrel divided portion 4a of a star wheel 4 related to a clock mechanism is arranged in the notched portion 7, a conveyor 11 is arranged between the lower spherical body storage 10 and the original spherical body storage 9, and the spherical body is transferred in the original spherical body storage 9 at a predetermined interval by a motor.